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09/896,408	06/28/2001	Christina Woody Mercier	15436.860	2281

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EXAMINER
JEAN GILLES, JUDE

ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>10 April 2007</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-7,9-18 and 50-76</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-4,6,7,9-18,50-70,73,75 and 76</u> is/are rejected.

7)☒ Claim(s) <u>5,7,71,72 and 74</u> is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>06/28/2001</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

This office action is responsive to the Reply filed on 04/10/2007.

Response to Amendment

1.   Claims 8, and 19-49 are cancelled, claim 1 is amended, and new claims 50-76

are added. Claims 1-7, 9-18 and 50-75 are now pending in view of amendments, and

represent a method and apparatus for "AUTOMATED CREATION OF APPLICATION

DATA PATHS IN STORAGE AREA NETWORKS."

Response to Arguments

2.   Applicant's arguments with respect to claims 1, 9, 73, and 76 have been carefully

considered, but are not deemed fully persuasive. Applicant's arguments are deemed

moot in view of the following new ground of rejection as explained here below.

The other dependent claims stand rejected as articulated in the Previous Office

Action and all objections not addressed in Applicant's response are herein reiterated.

In response to Applicant's arguments, 37 CFR § 1.11(c) requires applicant to "clearly

point out the patentable novelty which he or she thinks the claims present in view of the

state of the art disclosed by the references cited or the objections made. He or she

must show the amendments avoid such references or objections."

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4.   **Claims 1-4, 6, 7, 9-18, 50-70, 73, 75 and 76** are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu et al (hereinafter Liu) U.S. Patent No. 6762997 B1 in view of Soltis U.S. Pub. No. US 20070094354 A1.

Regarding **claim 1**, Liu discloses the invention substantially as claimed. Liu discloses *a* method of creating a data path for a process executing on a server coupled to a storage area network (SAN), the SAN providing connectivity between the server and a storage device in the SAN (*fig. 3, column 5, lines 49-67*), the method comprising:

parameterizing a set of attributes for a desired data path between the process and the storage device of the SAN (see abstract; also see *column 3, lines 11-36; column 4, lines 16-30*); wherein the set of attributes includes:

a detail about at least one data volume;

a performance setting; and

a policy setting;

and

constructing the data path that provides said set of attributes (*column 5, lines 2-12*), wherein said constructing step further comprises:

searching the SAN for a set of candidate storage devices (see abstract; also see column 3, lines 53-67);

identifying a candidate data path from the server to each candidate storage device of said set of candidate storage devices (see column 5, lines 15-48);

evaluating each said candidate data path against the set of attributes to rank said candidate data paths from a best candidate data path to a least best candidate data path according to the attributes (see Liu; abstract; column 3, lines 11-53); and

selecting said best candidate data path as the data path to be constructed by said constructing step (see abstract; column 1, lines 1-31). However one may argue that Liu does not specifically disclose a SAN and a server with the details of a set of attributes containing data volume and performance information, although it teaches a method for determining the shortest paths between source node and a destination node in a network which implies a SAN and any of these nodes may be a network server.

In the same field of endeavor, Soltis teaches "...a file sharing environment 140 is shown that utilizes a file system of the present invention. A Nasan environment 140 consists of Nasan client computers 142, SAN-attached devices 126, and at least one NAS server 106. Nasan clients 142 are connected to the NAS server 106 via network-based I/O interface links 110 connected to the LAN 104. The LAN 104 consists of network components such as routers, switches, and hubs. The Nasan clients 142 and NAS server 106 connect to the SAN-attached devices 126 via an I/O interface capable of transferring storage protocols over network connections. The NAS server 106 may actually be comprised of a cluster of computers serving file-level data via NAS protocols. The NAS server 106 may also be part of the file server component of a SAN appliance 136. (see Soltis; fig. 4, par. 0074, and 0075). Further more, Soltis discloses

a remote fiels system that facilitate the secondary read and write data-path to files

manage by the server. The requests are completed by the server using parameters

such as data volumes and performance criteria (See Soltis, par. 0084, and 0113).

Accordingly, it would have been obvious to one of ordinary skill in the networking

art at the time the invention was made to have incorporated Soltis's server and data

attributes with method of finding the shortest network path through candidate data

paths of Liu, for the purpose of "...determining transmission paths in a multipath

network.... "as stated by Liu in lines 6-11 of column 1. Soltis also provides motivation

to combine stating that this provides users and application programs with transparent

acces to shared data found o storage devices attached directy to a network (see Soltis,

par. 0073). By this rationale **claim 1** is rejected.

Regarding **claim 2**, the combination Liu-Soltis discloses the method of claim 1

wherein said set of attributes includes a pre-defined template (see Liu, see abstract;

also see *column 3, lines 11-36; column 4, lines 16-30*).

Regarding **claim 3**, the combination Liu-Soltis discloses the method of claim 2

wherein said set of attributes includes a data path owner, application, and the server on

which the application is executing (See Soltis, par. 0029, 0084, 0113, and 0073).

Regarding **claim 4**, the combination Liu-Soltis discloses the method of claim 2

wherein said pre-defined template specifies a set of performance, availability, and cost

metrics for the desired data path (See Soltis, par. 0084, and 0113; 0073).

Regarding **claim 6**, the combination Liu-Soltis discloses the method of claim 1

wherein said parameterizing step includes a step of entering a user-defined attribute for

inclusion in said set of attributes (see Liu; column 4, lines 31-65; See Soltis, 0073).).

Regarding **claim 7**, the combination Liu-Soltis discloses the method of claim 6

wherein said entering step includes entry of said user-defined attribute by use of a

graphical user interface coupled to the SAN (see Liu; column 4, lines 31-65).

Regarding **claim 9**, the combination Liu-Soltis discloses a method of creating a

data path for a process executing on a server coupled to a storage area network (SAN),

the SAN providing connectivity between the server and a storage device in the SAN

((See Soltis, par. 0084, and 0113), the method comprising:

parameterizing a set of attributes for a desired data path between the

process and the storage device of the SAN (see Liu; abstract; See Soltis, par. 0084,

and 0113; 0073); and

constructing the data path that provides said set of attributes(see Liu;

column 5, lines 2-12), wherein said constructing step further comprises:

searching the SAN for a set of candidate storage devices (see Liu;

abstract; also see column 3, lines 53-67);

identifying a candidate data path from the server to each candidate

storage device of said set of candidate storage devices (see Liu; column 5,

lines 15-48);

evaluating each said candidate data path against a selection the set of

attributes to rank said candidate data paths from a best candidate data path

to a least best candidate data path according to said set of attributes (see Liu; abstract;

column 3, lines 11-53);

presenting said ranked candidate data paths to a user for selection; and

selecting a user-selected candidate data path as the data path to be

constructed by said constructing step (see Liu; column 4, lines 31-65; *column 5, lines*

2-12; See Soltis, par. 0084, and 0113; 0073).

Regarding **claim 10**, the combination Liu-Soltis discloses the method of claim 9

wherein said presenting step recommends said best candidate data path for selection

by said user ((See Soltis, par. 0084, and 0113; 0073).).

Regarding **claim 11**, the combination Liu-Soltis discloses the method of claim 10

wherein said best candidate data path is presented as a default selection at said

selecting step ((See Soltis, par. 0084, and 0113; 0073)).

Regarding **claim 12**, the combination Liu-Soltis discloses the method of claim 9

wherein said selection metric includes storage device uptime information (see Heil;

column 8, lines 1-67; column 4, lines 31-65).

Regarding **claim 13**, the combination Liu-Soltis discloses the method of claim 9

wherein said selection metric includes performance information ((See Soltis, par. 0084,

and 0113; 0073).).

Regarding **claim 14**, the combination Liu-Soltis discloses the method of claim 9

wherein said selection metric includes cost calculation (See Soltis, par. 0084, and 0113;

0073).

Regarding **claim 15**, the combination Liu-Soltis discloses the method of claim 9

wherein said selection metric includes best SAN practices information (See Soltis, par.

0084, and 0113; 0073).

Regarding **claim 16**, the combination Liu-Soltis discloses the method of claim 9

wherein said selection metric includes learned state and usage information of the

SAN(*see Heil; column 6, lines 4-56*).

Regarding **claim 17**, the combination Liu-Soltis discloses the method of claim 9

wherein said searching step prequalifies a subset of candidate data paths by finding

those candidates that satisfy a pre-created policy prior to application of said evaluating

step (see Liu, abstract; column 4, lines 31-65).

Regarding **claim 18**, the combination Liu-Soltis discloses the method of claim 1

wherein said constructed data path includes all physical, logical and security component

identification and configuration information sufficient to operably link the process to an

identified data volume of the SAN (see Heil; column 2, lines 42-67).

Regarding claims 50-72, the combination Liu-Soltis discloses:

50. (New) The method of claim 1, further comprising:

connecting the SAN to a Wide Area Network (WAN) through a general purpose

computer; and

communicating with another processing system through the WAN using the general

purpose computer (see Soltis, fig. 4 and 5)).

51.(New) The method of claim 1, wherein the set of attributes includes a level of

security (see Soltis fig. 7; note that the read and write requests are made of threads) .

52. (New) The method of claim 51, wherein the level of security includes a data volume security (see Soltis fig. 7).

53. (New) The method of claim 52, wherein the data volume security includes whether the data volume is secure or open (see Soltis fig. 7).

54. (New) The method of claim 51, wherein the level of security includes a fabric security (see Soltis fig. 4 and 5).

55. (New) The method of claim 51, wherein the level of security includes a host bus adapter security (see Soltis fig. 4 and 5).

56. (New) The method of claim 1, wherein the set of attributes includes a data volume size (See Soltis, par. 0079, and 01091; 0104).

57. (New) The method of claim 1, wherein the set of attributes includes an end point storage type (see Soltis figs 4 and 5).

58. (New) The method of claim 1, wherein the set of attributes includes a number of threads(see Sotis, read and write requests).

59. (New) The method of claim 1, wherein the set of attributes includes a number of fabrics (See Soltis, figs. 4 and 5).

60. (New) The method of claim 1, wherein the set of attributes includes a bandwidth attribute (See Soltis, par. 0033, and 0036).

61. (New) The method of claim 60, wherein the bandwidth attribute specifies whether each thread must be exclusive or shared (See Soltis, fig. 7).

62. (New) The method of claim 1, wherein the set of attributes includes a cost characteristic (See Soltis, par. 0084, and 0113; 0073).

63. (New) The method of claim 62, wherein the set of attributes includes a cost

characteristic that considers a percentage of a device used by a data path (see Liu;

column 5, lines 15-48).

64. (New) The method of claim 1, wherein the set of attributes includes a device uptime

characteristic (See Soltis, par. 0079, and 01091; 0104).

65. (New) The method of claim 64, wherein the device uptime characteristic includes

data describing when a devices is available and unavailable (See Soltis, par. 0055, and

0097).

66. (New) The method of claim 1, wherein the set of attributes includes a rate of data

that an application is experiencing (See Soltis, par. 0080; 0073).

67. (New) The method of claim 1, wherein the set of attributes includes a number of

threads, a number of switch fabrics, and a level of security (See Soltis, par. 0084, and

0113; 0073; fig. 4, LAN).

68. (New) The method of claim 1, wherein the act of evaluating each said candidate

data path against the set of attributes includes ranking at least two data volumes in the

SAN (See Soltis, par. 0084, and 0113; 0073).

69. (New) The method of claim 68, wherein the act of evaluating each said candidate

data path against the set of attributes includes ranking all of the data volumes in the

SAN (See Soltis, par. 0084, and 0113; 0073).

70. (New) The method of claim 1, wherein the act of evaluating each said candidate

data path against the set of attributes includes ranking at least two data switch fabrics in

the SAN (See Soltis, fig. 4, 104; 0074).

73. (New) A method of creating a data path for a process executing on a server coupled

to a storage area network (SAN), the SAN providing connectivity between the server

and a storage device in the SAN, the method comprising:

parameterizing a set of attributes for a desired data path between the process and the

storage device of the SAN; and

constructing the data path that provides said set of attributes, wherein said constructing

step further comprises:

identifying candidate data paths from the server to each candidate storage device of

said set of candidate storage devices;

evaluating each said candidate data path against the set of attributes to rank said

candidate data paths from a best candidate data path to a least best candidate data

path according to the attributes, wherein a destination storage volume of each

candidate data path is ranked; and

selecting said best candidate data path as the data path to be constructed by said

constructing step(claims 73 is similar to claim and is rejected for the reason as claim 1).

75. (New) The method according to claim 73, further comprising presenting said ranked

candidate data paths to a user for selection; and wherein the best candidate data path a

user-selected candidate data path as the data path to be constructed by said

constructing step (See Soltis, item 142).

76. (New) A method of creating a data path for a process executing on a server coupled

to a storage area network (SAN), the SAN providing connectivity between the server

and a storage device in the SAN, the method comprising:

parameterizing a set of attributes for a desired data path between the process and the

storage device of the SAN; and

constructing the data path that provides said set of attributes, wherein said constructing

step further comprises:

identifying candidate data paths from the server to each candidate storage device of

said set of candidate storage devices;

evaluating each said candidate data path against the set of attributes to rank said

candidate data paths from a best candidate data path to a least best candidate data

path according to the attributes, wherein a security attribute of a storage volume is

included in the ranking; and

selecting said best candidate data path as the data path to be constructed by said

constructing step (claims 73 is similar to claim and is rejected for the reason as claim 1).

Allowable Subject Matter

5.   **Claims 5, 71, 72 and 74** are objected to as being dependent upon a rejected

base claim, but would be allowable if rewritten in independent form including all of the

limitations of the base claim and any intervening claims.

Conclusion

6.   Applicant's amendment to the claims and arguments based on the prior art of record necessitated the new ground(s) of rejection presented in this Office action. However, because the some of the independent claims were not amended, this **ACTION ACCORDINGLY IS MADE NON-FINAL**.

Any inquiry concerning this communication or earlier communications from examiner should be directed to Jude Jean-Gilles whose telephone number is (571) 272-3914. The examiner can normally be reached on Monday-Thursday and every other Friday from 8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wiley, can be reached on (571) 272-3923. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-9000.

Jude Jean-Gilles

Patent Examiner

Art Unit 2143

JJG

June 18, 2007

DAVID WILEY
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